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Robert A. Malone
Director, Environmental Affairs

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DIVISION OF OIL
GAS & MINING

December 20, 1985

ACT/035/002

Mr. Lowell P. Braxton
Division of Oil, Gas, and Mining
Utah Department of Natural Resources
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180

SUBJECT: Utah Copper Division Modernization Project

Dear Mr. Braxton:

Enclosed is Kennecott's response to your completeness letters of December 6 and 17, 1985, regarding the modernization of our Utah Copper Division. After you have review this material, I would appreciate the opportunity to meet with Mr. Ken May and you to discuss any technical differences that may exist. Given the holiday season and the shortness of time, I suggest January 3, 1986 as a meeting date. Please telephone me to discuss the meeting schedule.

Very truly yours,

R. A. Malone

RAM:mf
Enclosure

cc: L. K. Jacobsen, w/enc.
A. M. Trbovich, w/enc.
C. K. Vance, w/enc.
K. May, w/enc.

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RESPONSE TO COMPLETENESS REVIEW
LETTER OF DECEMBER 17, 1985
UTAH COPPER DIVISION MODERNIZATION PROJECT

Section 40-8-13 - DWH

Comment:

The applicant must provide a specific legal description of the land to be affected by the proposed Grinding Plant and new site access road construction activities (Phase I). This information will be included as part of the public notice requirement and tentative decision which must be published upon completion of the Division's review of the permit application.

Response:

The grinding plant will be located in the SW¼ of Section 5 and the SE¼ of Section 6, T3S, R2W, SLBM. The access road will bisect the SE¼ and the W½ of Section 8, T3S, R2W, SLBM, and will enter the plant in the SW¼ of Section 5, T3S, R2W, SLBM.

Rule M-3(1)(g) - JSL

Comment:

The applicant must submit a soil survey delineating the grinding plant and access road areas to be disturbed.

The Soil Conservation Service Soil Survey of the Salt Lake Area may be used for this matter. The soil survey should be used as a guide for topsoil removal. The soil survey map should depict the locations of the long term topsoil storage areas, all surface facilities (including the pipeline corridor), and each soil sample site. Drawing No. 712-C-105, Note No. 5 states that "Fill material stockpile areas and waste disposal sites are shown on DWG 712-C-120." The operator did not submit this drawing. The operator should submit DWG 712-C-120 and a map designating all topsoil storage locations. The estimated volume of topsoil should be delineated adjacent to the corresponding topsoil stockpile.

Response:

Kennecott will not store topsoil for short term or long term usage. The topsoil in the area is of marginal quality and the added expense of prestripping the area for topsoil salvage is not justified. Drawing 712-C-120 is enclosed.

Rule M-3(2)(c) - JSL

Comment:

A reclamation plan for the proposed grinding plant and the access road must be submitted. The operator must include a narrative describing the removal, storage and redistribution of topsoil. All soil removal activities should be preformed (sic) prior to any disturbance to the land surface. An explicit plan describing the protection of all topsoil stockpiles from wind and water erosion, compaction and contamination must be submitted. Berms and diversions should be employed to route surface drainage around the stockpiles.

Response:

Because the site grading program represents the first portion of a continuous three year construction program, no reclamation work is planned immediately after site grading is completed. After construction is completed, those areas of the site which are not covered by structures, paving, gravel or other material will be replanted. No topsoil will be stored for this purpose.

Rule M-10(7) - JSL

Comment:

The applicant shall include plans for the reclamation or stabilization of on-site roads.

Response:

On-site roads will be handled in the same manner as the general site. After the three year construction program is completed, all roads not required for operations will be graded and planted. Man-made materials (i.e., asphalt, concrete) will be removed to an approved landfill.

Rule M-10(14) - JSL

Comment:

A minimum depth of 12 inches of topsoil should be removed and stockpiled from the grinding plant and the access road site. This is based on the topsoil depth of the Dry Creek soil series described in the Soil Conservation Service Soil Survey of the Salt Lake Area. The applicant must perform a standard soil test to insure vegetation reclamation success. The Grinding Plant area should have a minimum of three soil sites sampled. The following should be evaluated: total nitrogen, available phosphorus, potassium, calcium, magnesium, sodium, sodium

absorption ration, alkalinity, electrical conductivity, saturation percentage, soil texture, organic matter, and pH. Based on the analytical soil data obtained by the above mentioned factors, a soil fertilizer recommendation can be obtained.

A soil redistribution plan must be implemented in the permit application. Such plan should include: the meteorological conditions during the period of redistribution, the minimum depth of topsoil redistribution, soil scarification plans, and protective procedures and precautions to reduce potential compaction by the operation of equipment.

Volume One of the Final Geotechnical Investigation Report submitted 12/03/85 states that clay lenses will need to be removed before commencement of the surface facility construction. The operator must submit plans for the disposal of this material.

Response:

Kennecott has extensive experience in vegetation reclamation in the area of the new facilities, making a soil test unnecessary. The seed mixture to be used for post-construction and final reclamation is presented in Table 1. Kennecott has used this mixture on a variety of soils at similar locations in the Oquirrh Mountains with success.

TABLE 1

POST-CONSTRUCTION AND FINAL RECLAMATION SEED MIXTURE

SPECIES	QUANTITY (PLS LB/ACRE)
Thick Spike Wheat Grass	0.75
Tall Wheat Grass	2.0
Intermediate Wheat Grass	4.0
Streambank Wheat Grass	1.0
Siberian Wheat Grass	1.75
Western Wheat Grass	0.5
Slend Wheat Grass	3.0
Pubescent Wheat Grass	5.0
Sheep Fescue	0.5
Ranger Alfalfa	2.0
TOTAL SEED	20.5
UREA	80

Topsoil will not be saved because of marginal value. No revegetation planting is planned immediately after site grading is completed because of the continuing construction program. As each portion of the project reaches final completion, the exposed ground will be final graded, tilled if necessary and planted. Planting will occur in the spring and fall.

Clay will be used to line the three precipitation runoff ponds at the grinding plant site.

Rule M-3(1)(a) - PGL

Comment:

How many acres are involved in Phase I (site gradation and road construction).

Generally, the applicant must delineate the boundaries of Phase I on a location map and outline the permit area (as well as the bonded area) on this map for Phase I. None of the information submitted referred to a reclamation plan for the area of Phase I. Therefore:

Response:

The grinding plant encompasses 115 acres. The boundaries are delineated on Drawing 712-SKC-108 (Exhibit B), which was included in our December 3, 1985 submission. The access road right-of-way encompasses 48 acres. The right-of-way is delineated by a 200 ft wide corridor centered on the mid-line of the access road, as depicted on Drawings 740-C-101, 740-C-102, 740-C-103, 740-C-104 and 740-C-105, which were included in our December 3, 1985 submission.

Rule M-10(2)(d) - PGL

Comment:

The applicant must address where warning signs will be posted (to prohibit public access to the operations). Please indicate the size of the signs and what they will say.

Response:

During construction, signs will be posted at all natural ingress points. After construction is completed, the grinding plant site will be fenced. Warning signs will be posted every 500 feet and at all natural ingress points. The signs will be approximately 10 inches by 20 inches and will say "Kennecott Property, No Trespassing, Violators Will Be Prosecuted."

Rule M-10(2)(b) - PGL

Comment:

The applicant must submit a plan which discusses the disposal of trash and debris as well as the disposition of any foundations and buildings, pipelines, culverts, asphalt, etc., associated with this proposal for Phase I construction.

Response:

During construction, trash and debris will be hauled to the Salt Lake County landfill near Lark. There are no foundations, buildings, pipelines, culverts, asphalt, etc., at the site.

Rule M-3(2)(a)(b) - PGL and LK

Comment:

The applicant must submit a plan for the reclamation of the land affected.

The applicant must submit a statement of known prior and current uses to which the land was put, including estimates of current resources and its capabilities to support a variety of uses or potential uses. Final reclamation should be tied to the expected post-mining land use (or current use). If the expected land use changes prior to reclamation, then the reclamation plan may be changed to be consistent with the new land use.

The applicant must include information about the possible uses for the land following termination of mining.

Response:

The grinding plant site and access road are currently used for wheat farming. Final reclamation will return the area to agriculture uses. Following reclamation, the area could also be used for manufacturing, commercial and residential purposes.

Rule M-3(2)(e)(f) - LK, PGL

Comment:

Revegetation plans are required for:

1. contemporaneous vegetation reclamation/stabilization of sediment pond outslopes, diversions, all cuts, fills, embankments, topsoil stockpiles, etc., and

2. final reclamation of all disturbed areas. These plans must identify the acres to be reseeded, species to be used, rates of seeds and/or seedlings to be planted, mulching and irrigation techniques (if any), fertilizer, and a timetable for completion of each major step in reclamation. The timetable does not need to identify dates work will begin and end, but should identify month or season of year and the expected time to complete the task.

Response:

After construction all exposed areas will be planted with the seed mixture cited in Table 1. This same seed mixture will be used following final reclamation. All planting will be done in the fall or spring.

Rule M-10(1) - PGL

Comment:

The applicant must submit a plan for approval of the post-mining land use.

Response:

If no manufacturing or other mining use can be found for the new facilities, the area will be returned to agriculture.

Rule M-10(7) - PGL and JSL

Comment:

The applicant must submit information for the reclamation of all roads and pads in Phase I. These roads must be indicated on the permit area map.

Response:

See response to Rule M-10(7) - JSL.

Rule M-3(1)(b) - PGL

Comment:

The applicant must, within the interior limits of the land affected, show existing, active or inactive, underground or surface mined areas. The boundaries of the surface properties must be shown and the names of surface and mineral owners.

Response:

No cited facilities exist. The entire site is owned by Kennecott.

Rule M-5 - PGL

Comment:

The applicant must submit a detailed cost estimate for the reclamation of the land affected during Phase I. This estimate represents the cost for the Division to do the approved reclamation work. References for the reclamation cost estimate are the Rental Rate Blue Book and the Means Site Cost Index.

Response:

The area can be replanted for $200 per acre including tilling. No other reclamation work would be required.

Rule M-10(9) - PGL

Comment:

The applicant must submit information about the removal of all structures, rail lines, utility connections, equipment and debris.

Response:
No cited facilities will be removed, except for miscellaneous debris. This debris will be removed to the Salt Lake County landfill near Lark.

Rule M-10(12)(2) - LK

Comment:
The applicant needs to provide documentation on how vegetation cover was estimated (page 28), including a description of sampling methodology, sample size, arithmetic mean and standard deviation.

Response:

The vegetation cover was estimated by Sergent, Hauskins & Beckwith, consulting geotechnical engineers, from Soil Survey of Salt Lake Area, Utah, Soil Conservation Service, U.S. Department of Agriculture, 1974, and was confirmed by aerial photography and visual examination of the area.

RESPONSE TO COMPLETENESS REVIEW
LETTER OF DECEMBER 6, 1985
UTAH COPPER DIVISION MODERNIZATION PROJECT

1. HYDROLOGY CONCERNS:

Title 40-8012(b) - TJS

Comment:

As many of the west side communities obtain significant portions of their water supplies from the ground water system, the applicant must describe the potential impact(s) to the hydrologic balance in the event of a system failure.

The applicant describes two pipelines to be constructed:

1. 48 inch process water return line;

2. 48 inch slurry pipeline to concentrators.

The applicant must describe the methods and control to be used to monitor and handle the materials to be transported by pipeline. The discussion should present information on the slurry and the process water lines. The applicant must describe: (1) the characteristics of the materials carried in including the slurry and process water pipelines; (2) what potential impacts these materials would have on the surface and ground water environment in the event of a system failure; and (3) in the event of a leak occurring in either pipeline, what clean up measures would be undertaken?

The applicant must describe how stable the pipelines would be in the event of an earthquake typical for the seismic zone.

Response:

The consequences of a break in the ore slurry pipeline is discussed on pages 38 and 39 of the Project Overview and Water Management Plan. Additional information is provided below.

The ore slurry pipeline will transport approximately 38,000 gpm of a 30% solids mixture of water and sand-sized ore. The mixture also contains 0.0025 to 0.025 gm/liter calcium hydroxide (as CaO) and 3.0 mg/liter burner oil (fuel oil #1) to act as reagents during the flotation process. The process water line will return approximately 32,000 gpm of water to the grinding plant. This water will be a mixture of water reclaimed from the

existing tailings pond and fresh make-up water from existing Kennecott sources. The water will typically be of NPDES discharge limitation quality.

These materials will have no impact on the surface and groundwater environment in the event of system failure. Such a failure is very unlikely. Any system failure will be detected very soon after occurrence by the telemetry network installed with the system (Pg. 37 and 38, Project Overview and Water Management Plan). Thus, any discharge would be limited to a maximum one hour occurrence. The material that would be released is non-toxic and would not adversely impact the water environment. Any ore that might be released would be recovered and returned to the system and the spill area would be replanted, if necessary.

The pipelines are designed to maintain integrity during a typical Zone III earthquake. The pipeline is designed to meet UBC-3 seismic requirements.

The Utah Bureau of Water Pollution Control has addressed the question of potential surface and ground water impacts from the modernization project. The Division may be duplicating efforts already expended by state government.

Rule M-3 (1)(c) - DH

Comment:

The applicant must provide technical documentation that leaching of copper sulfides from the proposed coarse ore pile to the subsurface as a result of rainfall/runoff events will not occur. If such documented proof is not available, the company may be required to submit plans for construction of a durable, impermeable pad with physical characteristics sufficient to impede the flow of sulfide leachate to the subsurface ground water system.

Response:

The ore will be in storage for only 24 hours. This short time period precludes leaching of the stockpile. Utah Copper Division has operated a coarse ore stockpile at the Bonneville concentrator since the mid-1960's. No leaching has been observed at this stockpile and affirms that leaching from stockpiles is not a concern.

2. SOILS CONCERNS:

Rule M-3(1)(g) - JSL

Comment:

The applicant must submit a minimum of a Class III (3) soil survey and map (scale 1 in. = 6,000 ft) of all potential disturbed sites. The soil survey

should be used as a guide for topsoil and subsoil removal. The soil survey map must depict the locations of the topsoil stockpile areas, the short-term storage areas of fill material, and all the surface facilities. Each soil sample point should be identified.

Response:

A soil report was included in our submission of December 3, 1985.

Rule M-3(2)(c) - JSL

Comment:

The applicant must provide a plant for the removal and protection of all long-term and short-term topsoil stockpiles and fill material stockpiles. The following items must be included:

1. A provision that all soil removal activities will be performed prior to any disturbance to the land surface;

2. The equipment to be employed in soil removal;

3. The soil survey and the results of the physical and chemical analysis should be used to develop a topsoil removal isopach map;

4. Plans for the protection of all topsoil stockpiles from wind and water erosion (berms and diversions should be employed to route surface drainage around and away from the stockpiles);

5. The volume of each stockpile must be clearly indicated;

6. And, the approximate aerial extent, dimensions, slope and shape of a typical stockpile(s) must be provided.

Response:

Topsoil of value does not exist at the site. Fill material will be moved directly from cut areas to fill area. Project cut and fill are designed to balance at the end of construction.

Rule M-3(2)(d) - JSL

Comment:

The application must include a detailed scenario of all grading and backfilling of the soil and fill material.

Response:

Detailed site grading plans were submitted to the Division on December 13, 1985.

Rule M-10(11) - JSL

Comment:

The application must include a plan discussing the measures for managing sediment control from disturbed areas during construction activities.

Response:

Sediment will be controlled from disturbed areas during construction activities by the use of runoff control berms, settling areas and sediment fences, as required.

Rule M-10(14) - JSL

Comment:

The applicant must perform a standard soil test to ensure vegetation reclamation success. The following must be evaluated: total nitrogen; available phosphorus; potassium; calcium; magnesium; sodium; sodium absorption ration; alkalinity; electrical conductivity; saturation percentage; soil texture; organic matter; and, pH. Based on the analystical soil data obtained by the above-mentioned factors, a soil fertilizer recommendation can be obtained.

Response:

Kennecott has extensive experience in vegetation reclamation in the area of the new facilities, making a soil test unnecessary. The seed mixture to be used for post-construction reclamation is presented in Table 1. Kennecott has used this mixture at similar locations in the Oquirrh Mountains with success.

TABLE 1
POST-CONSTRUCTION RECLAMATION SEED MIXTURE

SPECIES	QUANTITY (PLS LB/ACRE)
Thick Spike Wheat Grass	0.75
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Siberian Wheat Grass	1.75
Western Wheat Grass	0.5
Slend Wheat Grass	3.0
Pubescent Wheat Grass	5.0
Sheep Fescue	0.5
Ranger Alfalfa	2.0
TOTAL SEED	20.5
UREA	80

Comment:

A soil redistribution plan must also be implemented in the permit application. Such plan should include: the machinery to be used; the meteorological conditions during the period of redistribution; the minimum depth of topsoil redistribution; protective procedures to reduce potential compaction by the operation of equipment; and, soil scarification plans.

Response:

A variety of scrapers, loaders, tractors and trucks (tracked and rubber-tire) will be used during project construction. The program will be continuous from January 1986 to September 1988 and will encompass a wide range of meteorological conditions. The grinding plant site and embankments along the conveyor route and pipeline route will be planted as is after construction and final grading. Planting will be done in the fall and spring. Where necessary, disturbed surfaces will be tilled before planting to assure proper seed retention and germination.

3. ENGINEERING CONCERNS:

Rule M-3(1)(g) - PGL

Comment:

The applicant must show the location of the disposal area for overburden, waste, tailing, or any other rejected materials and water.

Response:

The existing disposal areas will not change as a result of the modernization project and are not addressed in this amendment.

Rule M-3(2)(c) - PGL

Comment:

The applicant must submit a plan for the manner in which overburden, topsoil, tailing, waste and reject materials will be deposited.

Response:

The manner in which these materials are deposited will not change as a result of the modernization and are not addressed in this amendment.

Rule M-10(2) - PGL

Comment:

The applicant must submit information about the construction of berms, fences and/or barriers above highwalls in the pit for safety.

Response:

The requested information is outside the scope of the modernization project and will not be addressed in this amendment.

Rule M-10(2)(d) - PGL

Comment:

The applicant must address where warning signs will be posted (to prohibit public access to the operations). Please indicate the size of the signs and what they will say.

Response:

The grinding plant and conveyor route will be fenced to prevent public access to potentially dangerous equipment. Warning signs will be posted every 500 ft and at every natural ingress point. Warning signs will be posted along the pipeline corridor at every crossing. The signs will be approximately 10 inches by 20 inches and will say "Kennecott Property, No Trespassing, Violators Will Be Prosecuted".

Rule M-10(2)(b) - PGL

Comment:

The applicant must submit a plan which discusses the disposal of trash and debris as well as the disposition of foundations and buildings and conveyors, pipelines, etc., associated with this proposal.

Response:

Trash and debris will be removed to the Salt Lake County landfill near Lark.

4. RECLAMATION CONCERNS:

Rule M-3(2)(a)(b) - PGL and LK

Comment:

The applicant must submit a plan for the reclamation of the land affected.

The applicant must submit a statement of known prior and current uses to which the land was put, including estimates of current resources and its capabilities to support a variety of uses or potential uses.

Final reclamation should be tied to the expected post-mining land use (or current use). If the expected land use changes prior to reclamation, then the reclamation plan may be changed to be consistent with the new land use.

The applicant must include information about the possible uses for the land following termination of mining.

Response:

This topic was discussed in our submission of December 3, 1985.

Rule M-3(2)(e)(f) - LK, PGL

Comment:

Revegetation plans are required for:

1. Contemporaneous reclamation/stabilization of all cuts, fills, embankments, topsoil stockpiles, etc., and

2. Final reclamation of all disturbed areas. These plans must identify the acres to be reseeded, species to be used, rates of seeds and/or seedlings to be planted, mulching and irrigation techniques (if any), fertilizer, and a timetable for completion

of each major step in reclamation. The timetable does not need to identify dates work will begin and end, but should identify month or season of year and the expected time to complete the task.

Response:

This topic was addressed in our submission of December 3, 1985.

Rule M-10(1) - PGL

Comment:

The applicant must submit a plan for approval of the post-mining land use.

Response:

This topic was addressed in our submission of December 3, 1985.

Rule M-10(4) and (5) - PGL

Comment:

The reclamation plan for the waste piles and fills must be submitted. Profiles of the post-mining configurations of the waste piles and fill must be submitted. The post-mining pit highwall configuration must also be included.

Response:

The reclamation of waste piles and pit highwall configuration is included in our existing mining and reclamation plan. This subject is outside the scope of this amendment.

Rule M-10(7) - PGL and JSL

Comment:

The applicant must submit information for the reclamation of all roads and pads. These roads must be indicated on the permit area map.

The application must include plans for the reclamation or stabilization of on-site roads.

Response:

The topic of road reclamation for the new facilities is discussed in our submission of December 3, 1985. Existing road reclamation is addressed in our existing mining and reclamation plan and is not addressed in this amendment.

Rule M-10(12)(s) - LK

Comment:

The applicant needs to provide documentation on how vegetation cover was estimated (page 28), including a description of sampling methodology, sample size, arithmetic mean and standard deviation.

Response:

The vegetation cover was estimated by Sergent, Hauskins & Beckwith, consulting geotechnical engineers, from Soil Survey of Salt Lake Area, Utah, Soil Conservation Service, U.S. Department of Agriculture, 1974, and was confirmed by aerial photography and visual examination of the area.

5. WILDLIFE CONCERNS:

Rule M-3(1)(a) - LK

Comment:

The applicant should provide a map indicating where road crossings will be provided over the pipeline. This same map should also identify those areas where the pipeline will be buried thus providing wildlife crossing opportunities.

Response:

This map was provided in our submission of December 3, 1985.

6. BONDING CONCERNS:

Rule M-3(1)(a) - PGL

Comment:

The applicant must submit a map designating the boundaries of the disturbance of the land involved (i.e., a permit area map) with the total number of acres involved.

Response:

Maps locating the grinding plant, the conveyor corridor and the pipeline corridor have been submitted. The pipeline corridor and the conveyor corridor will be 200 feet wide.

Rule M-3(1)(b) - PGL

Comment:

The applicant must, within the interior limits of the land affected, show existing active or inactive, underground or surface mined areas. The boundaries of the surface properties must be shown and the names of surface and mineral owners.

Response:

No existing active or inactive, underground or surfaced mined are present in the area subject to amendment. Kennecott owns all of the subject property.

Rule M-5 - PGL

Comment:

The applicant must submit a detailed cost estimate for the reclamation of the land affected. This estimate represents the cost for the Division to do the approved reclamation work. References for the reclamation cost estimate are the Rental Rate Bluebook and the Means Site Cost Index.

Response:

The modernization amendment represents approximately 350 acres of newly disturbed area, compared to 23,000 acres of approved disturbance. Based on the small increase in area being disturbed, a change to Kennecott's existing bond is not necessary.

Rule M-10(9) - PGL

Comment:

The applicant must submit information about the removal of all structures, rail lines, utility connections, equipment and debris. The cost of the removal must be included in the reclamation cost estimate.

Response:

New structures will be subject to the removal provisions of our existing mining and reclamation plan.